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10/681,080	10/08/2003	Vilho Nissinen	3397-94PDIV	6252

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EXAMINER

CORDRAY, DENNIS R

ART UNIT	PAPER NUMBER
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1731

MAIL DATE	DELIVERY MODE
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09/13/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/681,080

Applicant(s)

NISSINEN ET AL.

Examiner

Dennis Cordray

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 60,62-73,78-85,88,91,94-96,100-105,107 and 108 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 71,72,82-85,95,96,104 and 105 is/are allowed.
- 6) ☒ Claim(s) 60,62-70,73,78-81,88,91,94,100-103,107 and 108 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's amendments, filed 7/18/2007, have overcome the rejection(s) of Claims 60, 62-70, 78 and 81 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Dettling et al and evidenced by others. Therefore, the rejection has been withdrawn. The rejections of Claims 65-70, 73, 79-80, 88, 91, 94, 100-103 and 107-108 over Dettling et al in view of others have also been withdrawn. However, upon further consideration, new grounds of rejection are made as detailed below.

Regarding the argument that Dettling et al does not teach applying the pigments in dry form, it is noted that the features upon which applicant relies are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Furthermore, the instant claims recite a solids content of at least 80%, which does not appear to indicate that the pigments are in dry form. For further discussion of the solids content, refer to the rejections below.

Applicant argues that Virtanen fails to recite particles in the claimed size range. However, as discussed in the rejections below, Virtanen discloses particles having a size from 10 nm to 400 nm, which encompasses the claimed size range.

Oath/Declaration

2. The oath or declaration submitted 10/8/2003 is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application

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number and filing date is required. See MPEP §§ 602.01 and 602.02. The oath or declaration is defective because:

It does not state that the person making the oath or declaration acknowledges the duty to disclose to the Office all information known to the person to be material to patentability as defined in 37 CFR 1.56.

The originally submitted Oath recites the duty to disclose to the Office all information known to the person to be material to patentability as defined in 37 CFR 1.56(a), rather than 37 CFR 1.56:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 60, 62-64, 78 and 81 are rejected under 35 U.S.C. 103(a) as unpatentable over Dettling et al (6413591) in view of Watanabe et al (5543382) and evidenced by Haylock ("Paper, Its making, merchanting and usage") and Virtanen (WO 97/32934)

Claim 60: Dettling et al discloses a method of coating a paper (treating the surface of a web of cellulosic fibers) with a composition comprising fines, fibrils, fibers and/or calcium carbonate (placing the calcium carbonate on the web) without using a binder (Abs; col 3, lines 33-40; col 5, lines 54-59; col 6, lines 2-5). A preferred pigment is precipitated calcium carbonate having a particle size from 40 nm to 2 μ m.

Making a paper web inherently includes forming a web from fibers (if evidence is needed, see Haylock, p 69, (A) The wet end, item 1, which teaches a typical papermaking process comprising spreading fibers onto a moving web-formation substrate or wire).

Dettling et al does not disclose a particle size of 15 to 25 nm. Dettling et al discloses a preferred particle size of 40 nm to 2 μ m, but does not prohibit smaller particle sizes.

Watanabe et al discloses a heat-sensitive recording paper comprising a protective layer having a pigment, such as calcium carbonate, with an average particle size from about 10 nm to about 5 μ m to improve the suitability for printing and to prevent sticking (Abs; col 9, lines 9-15). Watanabe et al discloses a binder used with the coating (col 9, lines 23-25). However, the teaching to be gained from Watanabe et al is that it is well known in the art to use pigments having a broad range of particle sizes, including the claimed sizes, in paper coatings.

The art of Dettling et al, Watanabe et al and the instant invention is analogous as pertaining to coating paper with calcium carbonate pigments. The particle size range preferred by Dettling et al and the claimed size range are of the same general order of magnitude. Watanabe et al teaches that pigment particles in either range are known to be used in paper coatings. It would thus have been obvious at the time of the invention to one of ordinary skill in the art to use a calcium carbonate pigment of the claimed particle size in the process of Dettling et al in view of Watanabe et al and evidenced by Haylock to improve the printability of the paper. Absent evidence showing special

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properties derived from using pigment particles in the claimed size range over those preferred by Dettling et al, the substitution of the smaller particle sizes would have given predictable results based on the teachings of the cited prior art.

Claim 62: Particles in the size range of 100 nm are subject to van der Waals binding forces of about 1,000,000 Pa (if evidence is needed, see Virtanen, WO 97/32934, p 7, lines 17-23). The force increases with smaller particles, thus the particles in the disclosed size range are subject to van der Waals binding forces.

Claims 63-64: The coating of Dettling et al contains fines, fibrils, fibers and/or pigments and, in some embodiments, can comprise essentially all calcium carbonate particles (col 3, lines 33-40).

Claim 78: Dettling et al discloses abrading the web (mechanical treatment) prior to coating to increase its specific surface area. The increased surface area increases surface bonding sites, thus promotes adherence of particles to the surface (col 4, lines 21-28 and 45-51).

Claim 81: Calendering is disclosed as a post-treatment (col 7, lines 33-35).

4. Claims 60, 62-70, 78 and 81 are rejected under 35 U.S.C. 103(a) as unpatentable over Dettling et al (6413591) in view of Virtanen and evidenced by Haylock ("Paper; Its making, merchenting and usage") and Virtanen (WO 97/32934)

Claims 60 and 64-70: The disclosure of Dettling et al is used as above.

Virtanen discloses a coating pigment used in paper manufacturing comprising core pigment particles, such as calcium carbonates, having precipitated calcium

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carbonate particles (single elementary particles) bound to them essentially by physical forces to form calcium carbonate agglomerates (flocced particles). The precipitated calcium carbonate particles range from 10 to 400 nm in size and the agglomerates range from 40 to 400 nm in size (p 3, lines 25-37; p 9, lines 23-26). The size of the clusters is regulated by adjusting the pH of an aqueous dispersion of calcium carbonate or by applying high energy stirring (creating a turbulent flow) (Abs; p 7, lines 1-5; p 8, lines 7-16; par bridging pp 9-10; p 10, lines 23-28). In a preferred embodiment, the agglomerates are used for coating paper (p 1, lines 13-18; p 9, lines 19-21). The agglomerates provide advantageous properties of both conventional pigment particles and precipitated calcium carbonate coating while avoiding their disadvantages (p 3, lines 1-3).

The art of Dettling et al, Virtanen and the instant invention is analogous as pertaining to coating paper with calcium carbonate pigments. It would have been obvious at the time of the invention to one of ordinary skill in the art to use calcium carbonate pigment particles and agglomerates in the process of Dettling et al in view of Virtanen and evidenced by Haylock to take advantage of the properties of both the core particles and the coating particles. The substitution would have given predictable results. The agglomerated particles comprise elementary particles in the claimed size range, thus the paper is treated with a pigment material comprising elementary particles in the claimed range or a flocced particle comprising elementary particles. In addition, one of ordinary skill in the art would have found it obvious that at least some of the

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elementary precipitated calcium carbonate particles are not part of a flocced particle, and that the web is also treated with elementary particles.

Claims 62-63, 78 and 81 are treated as above.

5. Claims 73, 88-89, 91, 94, 100 and 103 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dettling et al in view of Watanabe et al or Virtanen and further in view of Haylock and Ilmasti et al (WO 98/11999).

The disclosure of Dettling et al, Watanabe et al, Virtanen and Haylock are as above.

Dettling et al, Watanabe et al and Virtanen do not disclose applying calcium carbonate to the web by an ion blast technique. Dettling et al, Watanabe et al and Virtanen also do not disclose the method of forming the paper web.

Haylock teaches a typical papermaking process comprising spreading fibers onto a moving web-formation substrate or wire. Haylock teaches that the web is further treated by pressure rolls (mechanical treatment) (p 69, (A) The wet end item 4). Finishing steps include calendering using one or more heated rolls to achieve a smooth finish (p 102-103, Calendering). Coating is a typical finishing step as well used to apply pigments and polymeric adhesives (p 116, Coating). Calendering is a step following coating that provides the best finishes (p 118, 3rd par). Some of the calender rolls can be heated (p 103, first half of page). Fillers and pigments can be added to the pulp (p 60, Loadings or Fillers to p 61, Sizing Agents). Formation of a nonwoven web from cellulosic fibers, plant fibers, glass fibers or other fibers is a well known (p 13, last par).

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Haylock does not disclose applying calcium carbonate to the web by an ion blast technique.

Ilmasti et al discloses a method of transferring material additives to the surface of a moving web, for instance paper, wherein the web is manufactured by a conventional continuous web formation process (p 1, lines 4-9). Application of dust or sprayable materials is disclosed (p 2, lines 10-11). The web passes through a housing wherein the additional material is transferred to the web by ion blasting provided by a high voltage potential between high voltage electrodes above the web (second electric potential) and a plate electrode (first electric potential) below the web (p 2, lines 5-15; p 3, lines 1-12). The web moves across the lower plate electrode and is thus brought to a first electric potential by virtue of moving to the plate. The method transfers material quickly and evenly to the surface of the moving web (p 2, lines 1-3) and results in decreased water usage and therefore decreased need for drying (p 2, lines 25-28).

The art of Dettling et al, Watanabe et al, Virtanen, Haylock, Ilmasti et al and the instant invention is analogous as pertaining to making paper and coating the paper with pigments. It would have been obvious to one of ordinary skill in the art to use an ion blast method to coat the paper of Dettling et al in view of Watanabe et al or Virtanen and further in view of Haylock and Ilmasti et al to obtain an even coating and save on water usage and drying requirement. It would also have been obvious to form the paper using standard processes and apparatus, including spreading fibers on the surface of a moving formation substrate, draining, drying and calendering.

Claim 73: The method of Ilmasti et al is applicable to powders, which are 100% solids. It would have been obvious to one of ordinary skill in the art to use a treatment composition of up to 100% solids to minimize the amount of drying required after the coating.

6. Claims 79-80 and 101-102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dettling et al in view of Watanabe et al or Virtanen and further in view of Haylock, Ilmasti et al and Yagi et al (4944959).

Dettling et al, Watanabe et al, Virtanen, Haylock and Ilmasti et al do not disclose treating the web by brushing to establish a static charge. Ilmasti does disclose that conventional methods of addition include changing the electrical properties of the surface (p 1, lines 14-16).

Yagi et al discloses applying a charge to a substrate, thereby changing the electrical properties of the substrate, by using frictional contact (col 4, lines 55-62). The frictional contact can comprise rubbing the surface with an appropriate material to impart a positive or negative charge as desired to the surface (col 5, lines 8-65). The electrostatic recording process wherein toner (pigment) particles adhere to a charged surface is well-known.

The art of Dettling et al, Watanabe et al, Virtanen, Haylock, Ilmasti et al, Yagi et al and the instant invention is analogous as pertaining to pigments and calcium carbonate used in papermaking. It would have been obvious to one of ordinary skill in the art to to pretreat the paper to generate a static charge by frictional brushing in the

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method of Dettling et al in view of Watanabe et al or Virtanen and further in view of Haylock, Ilmasti et al and Yagi et al to better attract and hold the pigment particles. Brushing inherently lifts the microfibrils from the surface or, at least, it would have been obvious to one of ordinary skill in the art at the time of the invention that the microfibrils are lifted.

7. Claims 107-108 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dettling et al in view of Watanabe et al or Virtanen and further in view of Haylock, Ilmasti et al and Andersen et al (WO 95/18885).

Dettling et al, Watanabe et al, Virtanen, Haylock and Ilmasti et al are applied as in the rejection of Claim 88. Dettling et al, Haylock and Ilmasti et al do not disclose obtaining the calcium carbonate from the residue of a deinking process.

Dettling et al discloses that the coating can comprise a conventional coating color (pigment) (col 4, lines 21-28).

Andersen et al discloses recovery of calcium carbonate from sludge that is a by-product of the manufacture of recycled paper (sludge from a deinking process, for instance) comprising calcining the mineral precipitate into lime, reacting the lime with water and reacting the calcium hydroxide with carbon dioxide (Abstract; p 7, lines 25-29).

The art of Dettling et al, Watanabe et al, Virtanen, Haylock, Virtanen, Ilmasti et al, Andersen et al and the instant invention are analogous as pertaining to pigments and calcium carbonate used in papermaking. It would have been obvious to one of ordinary

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skill in the art to use recycled calcium carbonate processed from a waste sludge, such as a deinking sludge, in the coating process of Dettling et al in view of Watanabe et al or Virtanen and further in view of Haylock, Ilmasti et al and Andersen et al as a functionally equivalent option and to make use of inexpensive raw materials. Calcining the mineral precipitate into lime, reacting the lime with water and reacting the calcium hydroxide with carbon dioxide is a well-known process and would have been obvious.

Allowable Subject Matter

8. Claims 71-72, 82-85, 95-96 and 104-105 are allowable. The following is a statement of reasons for the indication of allowable subject matter.

The large body of prior art teaches formation of precipitated calcium carbonate prior to formation of the web, either in a separate process, after which the product is conveyed to the web, or in an aqueous slurry of fibers with reactants of calcium oxide, calcium hydroxide and carbon dioxide. In the prior art, there is no indication of causing the reaction to occur on the formed web.

Prior art also does not teach calendaring of the web while calcium carbonate is still in an amorphous form.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Cordray whose telephone number is 571-272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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